

Amendments to the Specification

1. Please replace Paragraph [0004] with the following replacement Paragraph [0004]:

[0004] In accordance with an embodiment of the present invention, a method of optimizing access network utilization is provided. The access network includes a plurality of integrated access devices coupled to a segment and reassembly device, where each segment and reassembly device has a plurality of channels, X . The method includes the steps of providing a plurality of subscriber lines, Σm_i , coupled to the integrated access device, providing a plurality of integrated access device lines, Σn_i , between the integrated access devices and the segment and reassembly device, multiplexing the plurality of subscriber lines by the integrated access device onto the plurality of integrated access device lines, such that $\Sigma m_i > \Sigma n_i = X$, $\Sigma m_i > \Sigma n_i$ and $\Sigma n_i = X$, and providing a reorder tone to any subscriber whose call is blocked.

2. Please replace Paragraph [0005] with the following replacement Paragraph [0005]:

[0005] In accordance with another embodiment of the present invention, a method of optimizing access network utilization is provided. The access network includes a plurality of integrated access devices coupled to a segment and reassembly device each having a plurality of channels, X . The method includes the steps of providing a plurality of subscriber lines, Σm_i , coupled to the integrated access device, providing a plurality of integrated access device lines, Σn_i , between the integrated access devices and the segment and reassembly device, multiplexing the plurality of integrated access device lines onto the plurality of channels, such that $\Sigma m_i = \Sigma n_i > X$, $\Sigma m_i = \Sigma n_i$ and $\Sigma n_i > X$, and providing a reorder tone to any subscriber whose call is blocked.

3. Please replace Paragraph [0006] with the following replacement Paragraph [0006]:

[0006] In accordance with yet another embodiment of the present invention, a method of optimizing access network utilization is provided. The access network includes a plurality of access devices coupled to a VoDSL device each having a plurality of channels, X . The method includes the steps of providing a plurality of subscriber lines, Σm_i , coupled to the access devices, providing a plurality of access lines, Σn_i , between the access devices and the VoDSL device, multiplexing the plurality of access lines onto the plurality of channels X , such that $\Sigma m_i = \Sigma n_i > X$, $\Sigma m_i = \Sigma n_i$ and $\Sigma n_i > X$, and providing a reorder tone to any subscriber whose call is blocked.

4. Please replace Paragraph [0015] with the following replacement Paragraph [0015]:

[0015] FIG. 2 is a simplified block diagram of a telecommunication network 30 with an integrated next generation switch 32 using the optimization method of the present invention. Unlike the typical transitional network where voice and data streams are separated in the access network, telecommunication network 30 includes a unified access network 34. The use of integrated next generation switch 32 ~~obviated~~ obviates the need for an access or media gateway and its GR-303 interface. Therefore, the entire system may be efficiently engineered, including the access network bandwidth and AAL2 channel capacity for real traffic requirements.

5. Please replace Paragraph [0018] with the following replacement Paragraph [0018]:

[0018] The second configuration optimizes the line usage by making $\sum m_i > \sum n_i = X$ $\sum m_i > \sum n_i$ and $\sum n_i = X$ or 1023 lines, where there is concentration at the integrated access device. This implementation requires that the integrated access device provide reorder tone to the subscriber when calls are blocked, which is now possible. This is a viable configuration, but there is no standard VoDSL protocol to support it. Any vendor implementing this solution must do so in a proprietary manner. Vendor proprietary solutions are not popular in today's network, so this solution is less than optimal from the network operator's point of view. Instead of providing blocked call treatment at the IAD, we can provide it from the switch and still support oversubscription of the AAL2 channels.

6. Please replace Paragraph [0021] with the following replacement Paragraph [0021]:

[0021] In this implementation, the system blockage is divided between the integrated access devices and the switch. Allocating 20% of the total system blocking probability of 0.01 to the switch gives a probability of blocking at the AAL2 device of 0.002. Erlang-B shows that 1023 circuits at 0.002 blocking probability can support 962.56 Erlangs of traffic. The blocked traffic equates to $0.002 * 962.56 = 1.925$ Erlangs. Because average holding time on reorder is 3 seconds versus 180 seconds for a normal call, we divide ~~divide~~ $1.925 / 60 = 0.032$ Erlang. Due to our assumption of 5 tries each time a user is blocked from normal call completion, $0.032 \text{ Erlang} * 5 = 0.16$ Erlang of blockage traffic to manage. Applying Erlang-B once again, 0.16 Erlang at 10^{-9} probability of blocking requires 7 AAL2 circuits. Repeating these calculations once again with $1023 - 7 = 1016$ revenue AAL2 channels confirms 955.72 Erlangs of revenue traffic. At 10% usage per line, this configuration supports a maximum of 9557 subscriber lines, m_i , regardless how large n_i grows as long as it is at least >1023 ; the number of total AAL2 channels.

7. Please replace Paragraph [0022] with the following replacement Paragraph [0022]:

[0022] The next configuration is a simplification of the previous configuration. In the previous two configurations, the integrated access device would provide reorder tone for the calls it blocks. While useful for examining all possible solutions to the problem, it is not necessarily a practical solution because no integrated access device standards exist and no known products on the market support this environment. So, to converge on a solution that is both efficient and implemented with readily available products, the configuration where $\Sigma m_i = \Sigma n_i > 1023$ $\Sigma m_i = \Sigma n_i$ and $\Sigma n_i > 1023$ lines is studied.